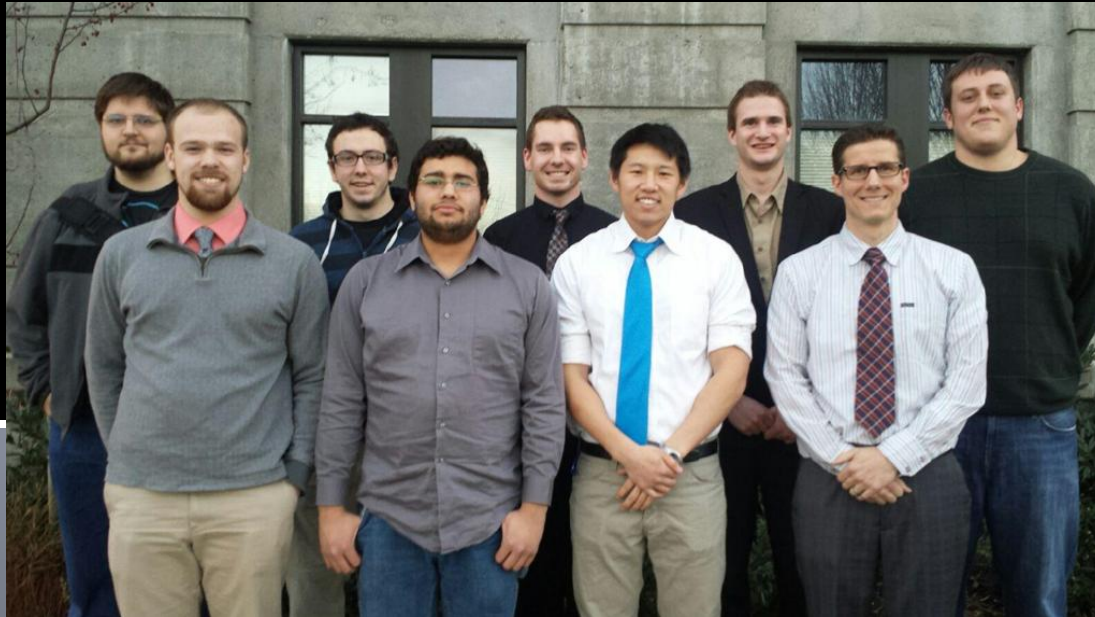


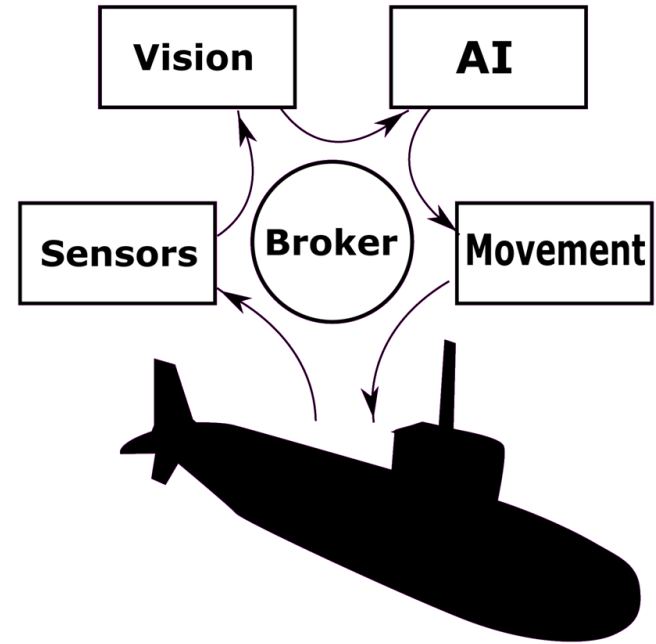
University of Idaho Robosub



Computer Science

Module Architecture

- Communication Broker
- Sensor Sanitizer
- Computer Vision
- Mission Planner
- Fuzzy Logic Movement

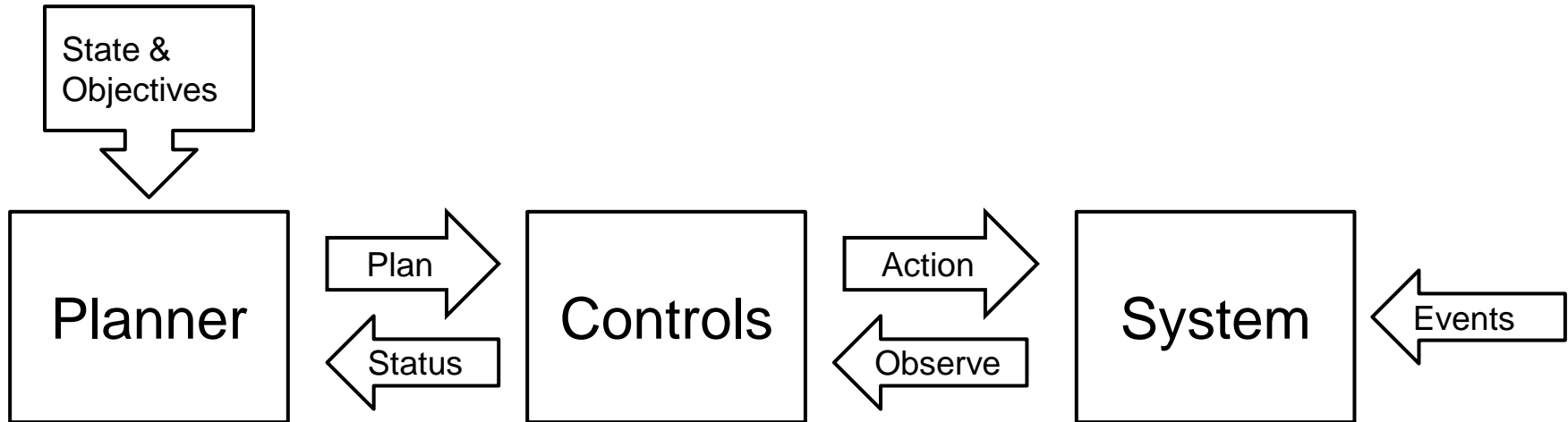


Sensor Sanitizer

- Resolves noise / uncertainty
- Input
 - Sensor Data
- Output
 - Estimated Position - (x, y, z)
 - Camera Feeds

AI Planning & Execution

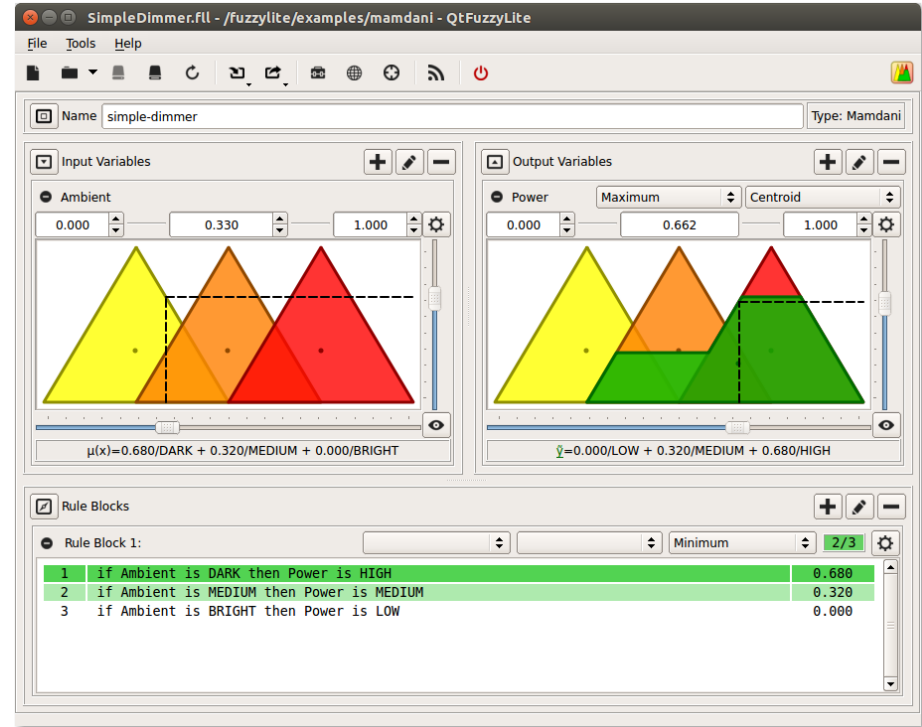
Goal Types: Task, State, Path



Movement Design

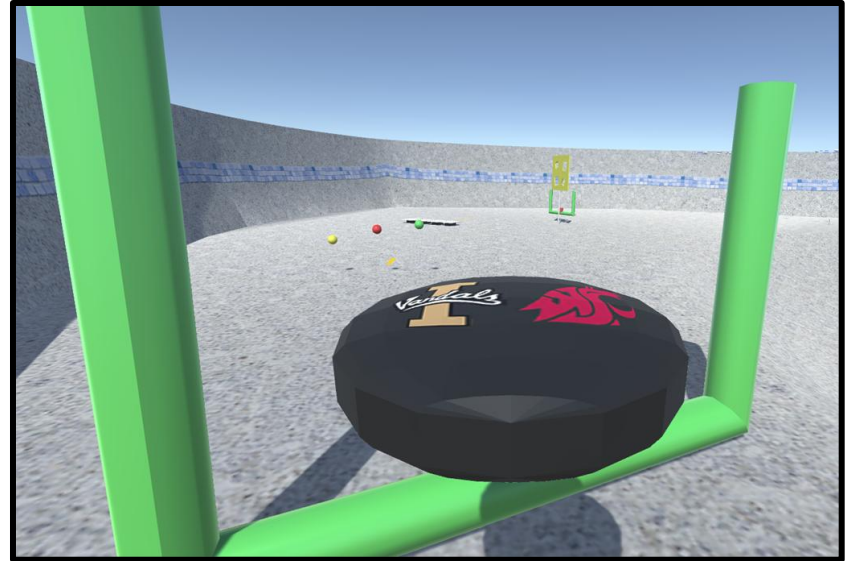
- Uncertain Movement
 - Fuzzy Logic!
- Human Intuition
 - Driving
- Applications
 - Japan Bullet Train
 - RoboSub!

“We must exploit our tolerance for imprecision”
Zadeh, Prof. System Engineering UCB



Virtual Pool

- Visualize Competition
- Testing
 - Pool Tests 2-3 weeks
 - Virtual Test on Demand



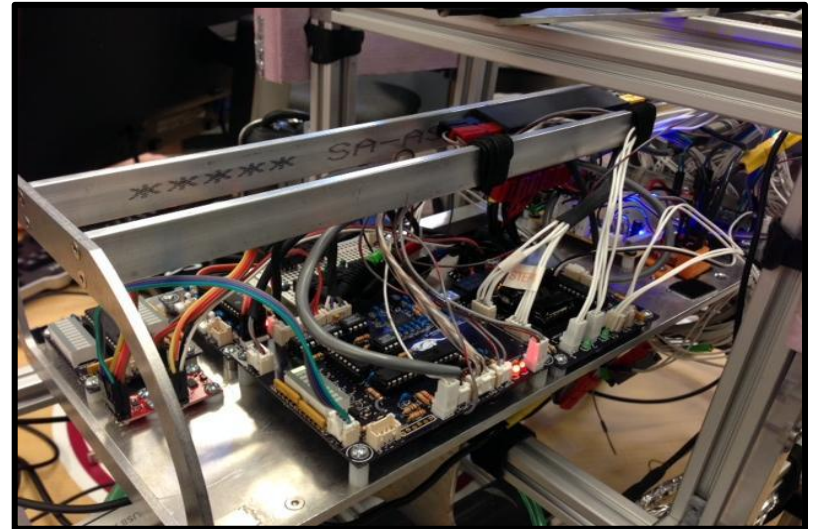
Electrical Engineering

Printed Circuit Boards (PCBs)

Problem Definition: Redesign PCB layout from cumbersome, tangled mess that takes up a lot of space

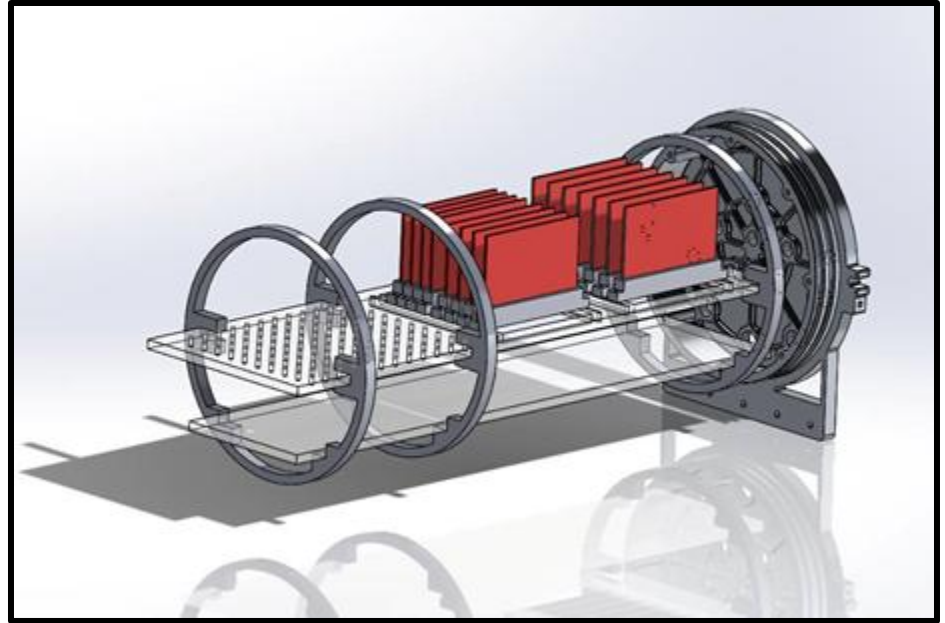
Concerns:

- Excessive Wear on the boards
- Difficult to access
- Wire Nest
- Waste of space



PCB Design Implementation

Design Solution: Streamline edge-connector system. Allows for quick board removal and inspection. Removable tray with extra space for further upgrades



Mechanical Engineering

Sub Stand

Problem Definition: Design system capable of transporting the submarine/allowing for 360° access for maintenance



Design Features:

- Holds sub at working height 24"-36"
- Moves vertically
- Rotates about central horizontal axis
- Double as a presentation stand

Alternate Battery Tube

Problem Definition: Make an additional Battery tube which will allow for hot swapping

NOTE: Will be longer than previous battery tube and is being repositioned rear of reed switches to distribute weight more evenly

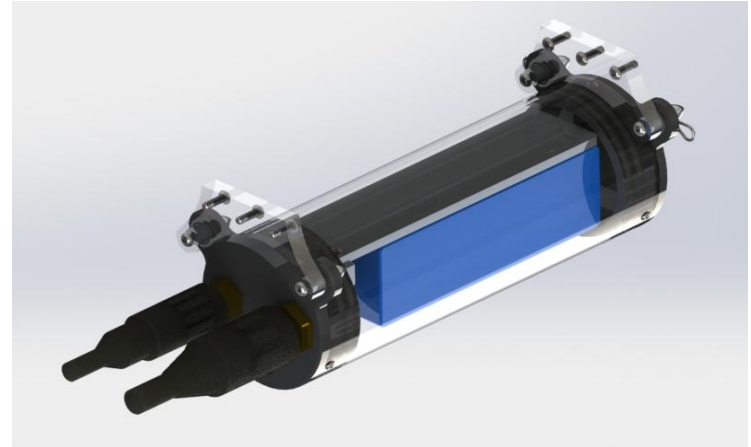
Materials:

Clear Polycarbonate Tube

Black Delrin Resin Rod

Prevco Low Pressure Relief Valve

SEACON 8-pin and 16-Pin Connectors



Marker Dropper

Problem Definition: Model and create new marker droppers that operate independently of each other and other systems

Design Considerations:

- Use corrosion resistant materials
- Replace motors with pneumatics

Material: All components besides pneumatics are 3D Printed in PLA



Pneumatic Housing

Problem Definition: Design and construct water tight housing for pneumatic components

Specifications:

- Material: PLA and Acrylic
- Easily removable
- Easily Accessible
- Allows future years to implement additional pneumatic systems without need for redesign



Underwater Camera Enclosure

Problem Definition: Design waterproof enclosure for new camera and lens



Needs:

- Water tight
- 180 degree field of view

Constraints:

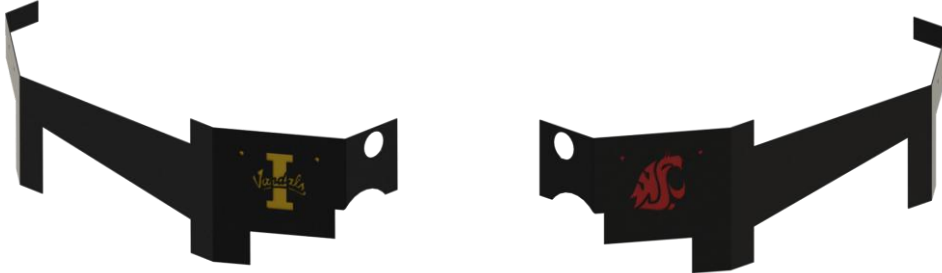
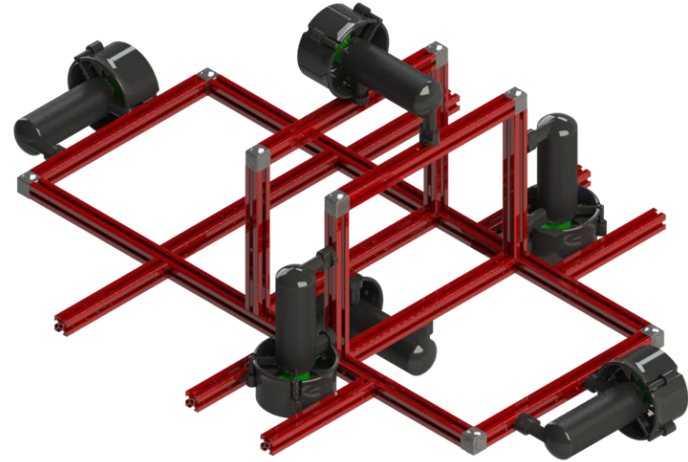
- Need sufficient space for a 35mm (1.38 in) long connector on the back of camera

Frame Redesign

Problem Definition: Design a system that allows for easy weight/buoyancy changes

Why not...

- have the system to be a weight itself
- use this as a way to help protect the submarine from collisions
- provide the sub a stand for when it's not in the water



Thank You

